

DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D119-646 REV. D
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D119-646 REV. 3
REF FAA STC: SR02024SE
REF EASA STC: 10040294

1.0 PURPOSE:

The purpose of this Dart Service Instructions is to add D119-646-313/-314 Skidtube Protector Kit to make the D119-646-011/-012/-041/-111/-112/-141/-211/-212/-241 Skidtube Kits compatible with the 109-0812-68-105 Hoist Structural Provision Kit and the 109-0816-18-301 Rappelling Kit. The D119-646-313 Skidtube Protector, LH replaces the 109-B710-05-201 kit and the D119-646-314 Skidtube Protector, RH replaces the 109-B710-05-202 kit.

B 2.0 D119-646-011/-012/-041/-111/-112/-141 MODIFICATION:

The following instructions are for modifying the D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 004 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 2.1 Remove D3492-045 Plug Assemblies from two locations on each side of the skidtube as shown in Figure 3.
- 2.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 2.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 2.4 Countersink 4x 5/16" holes to $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 2.5 Repeat steps 2.2 to 2.4 for the opposite side of the skidtube.
- 2.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 2.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 005 and subsequent, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.

B 3.0 D119-646-211/-212/-241 MODIFICATION:

The following instructions are for modifying the D119-646-211/-212 Skidtube at CHG 005 and prior, and D119-646-241 at CHG 004 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 3.1 Temporarily remove D3849-043 Training Wearplate from aft end of the skidtube per ICA-D119-646 Section 32.
- 3.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 3.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 3.4 Countersink 4x 5/16" holes to $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 3.5 Repeat steps 3.2 to 3.4 for the opposite side of the skidtube.
- 3.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 3.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

D119-646-211/-212 Skidtube at CHG 006 and subsequent, and D119-646-241 Skidtube at CHG 005 and subsequent, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.

APPROVED

B	REVISED DSI TO INCLUDE INSTALLATION INSTRUCTIONS FOR SKIDTUBE ASSY D119-646-011/-012/-111/-112/-041/-141/-241 CHG 005 & SUBSEQUENT AND SKIDTUBE ASSY D119-646-211/-212 CHG 006 & SUBSEQUENT. ADDED NAS1149D0316J WASHERS TO BOM.	WK	17.02.16
A	NEW ISSUE	RF	15.12.10
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
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CHECKED	VS	DRAWING NO.	REV. B
MFG. APPR.	N/A	DSI 9734	SHEET 1 OF 10
APPROVED	MS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
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B 4.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-011/-012/-041/-111/-112/-141:

- 4.1 Remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs.
- 4.2 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 005 and subsequent, Install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 4.3 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 4.4 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 4.5 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 4.6 If the D119-646-313 Skidtube Protector Kit is required for rappelling operations on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 4.7 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS1149D0332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 4.8 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS1149D0332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 4.9 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 7.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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B 5.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-211/-212/-241:

- 5.1 Remove and discard all hardware attaching the training wearplates in front of the skidtube ground handling lugs.
- 5.2 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-211/-212 Skidtube at CHG 006 and subsequent, and D119-646-241 Skidtube at CHG 005 and subsequent, remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs & install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 5.3 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 5.4 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 5.5 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 5.6 If the D119-646-313 Skidtube Protector Kit is required for rappelling operation on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 5.7 Reinstall the D3849-043 Training Wearplate on the aft end of the skidtube per ICA-D119-646 Section 32, except for hardware under D5369-1/-2 Cable Guard.
- 5.8 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 5.9 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 5.10 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 7.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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6.0 PARTS LIST:

Qty. -313	Qty. -314	PART NUMBER	DESCRIPTION
X		D119-646-313	SKIDTUBE PROTECTOR, LH
	X	D119-646-314	SKIDTUBE PROTECTOR, RH
6	6	D3904-1	WASHER
6	6	D4506-3	WASHER
1		D5369-1	CABLE GUARD, LH
	1	D5369-2	CABLE GUARD, RH
1		D5371-1	HOOK, LH
	1	D5371-2	HOOK, RH
1	1	D5372-1	PLUG
6	6	D5374-1	BUSHING
8	8	D5374-3	BUSHING
1	1	D5376-1	DRILLING JIG
4	4	AN3-45A	BOLT
6	6	AN3-47A	BOLT
6	6	AN3-50A	BOLT
18	18	NAS1149D0332J	WASHER
4	4	NAS1149D0316J	WASHER
10	10	MS21042L3	NUT

B

7.0 WEIGHT AND BALANCE

The following weight and balance changes are applicable:

Installation	Weight	LONGITUDINAL		LATERAL	
		Arm	Moment	Arm	Moment
D119-646-313 SKIDTUBE PROTECTOR, LH	4.3 lb 1.95 kg	108.1 in 4.3 m	465 in-lb 8.4 kg-m	-43.4 in 1.7 m	-187 in-lb -3.3 kg-m
D119-646-314 SKIDTUBE PROTECTOR, RH	4.3 lb 1.95 kg	108.1 in 4.30 m	465 in-lb 8.4 kg-m	43.4 in 1.7 m	187 in-lb 3.3 kg-m

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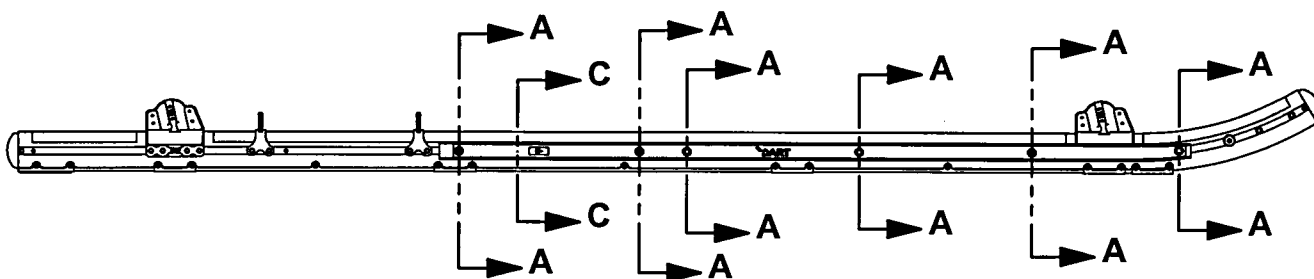


FIGURE 1: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-011/-012/-111/-112 SKIDTUBES)

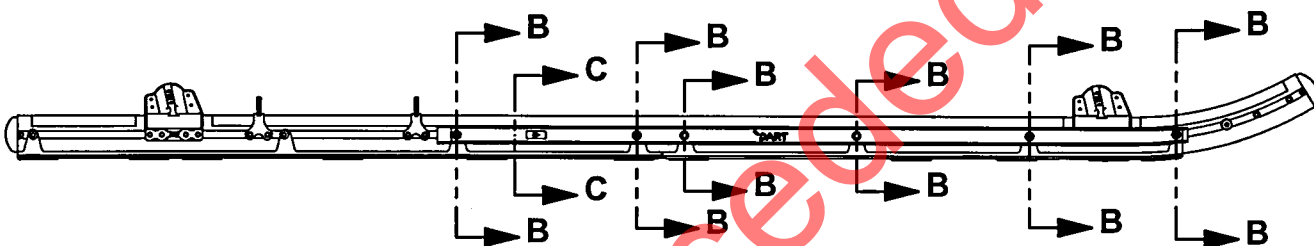


FIGURE 2: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-211/-212 SKIDTUBES)

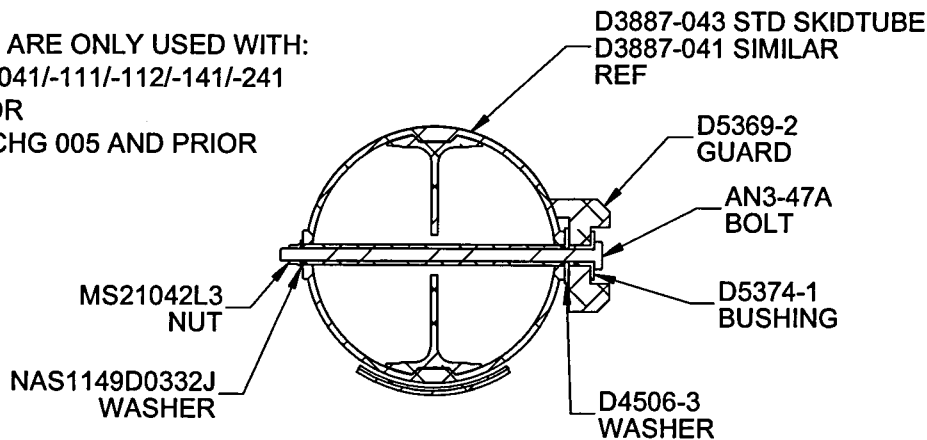
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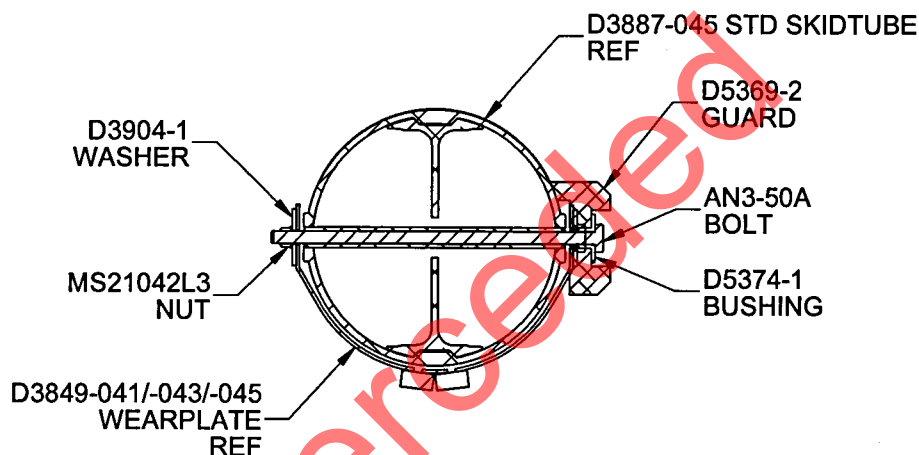
NOTES:



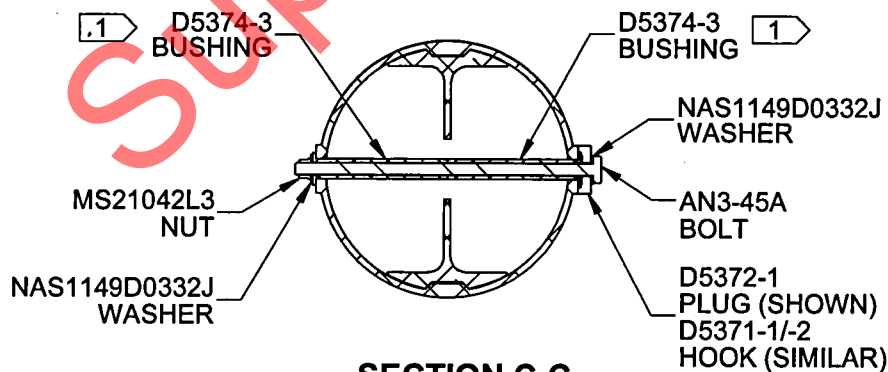
- 1) D5374-3 BUSHINGS ARE ONLY USED WITH:
 - D119-646-011/-012/-041/-111/-112/-141/-241
 CHG 004 AND PRIOR
 - D119-646-211/-212 CHG 005 AND PRIOR



SECTION A-A



SECTION B-B

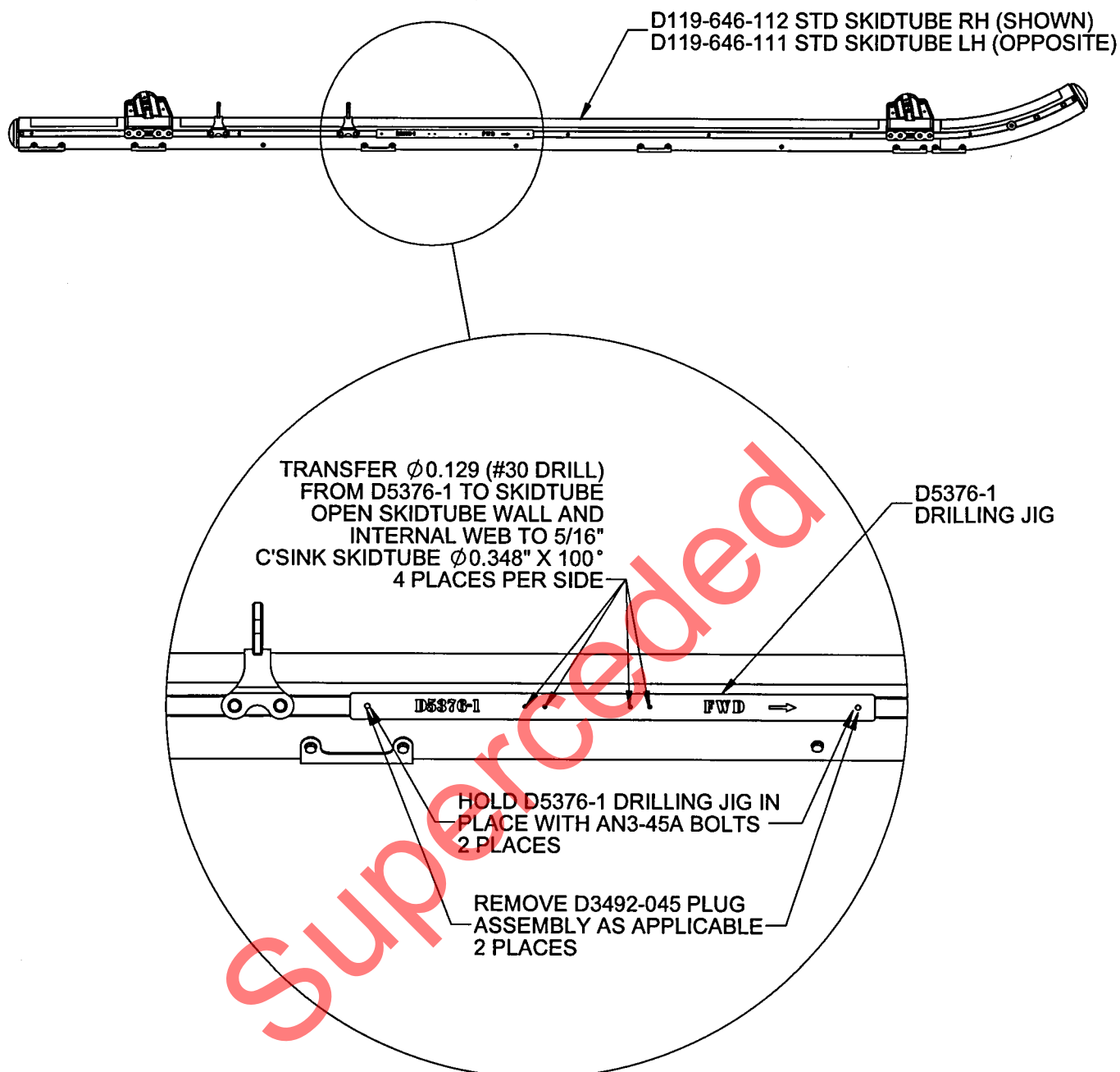


SECTION C-C

(D5369-2 NOT SHOWN FOR CLARITY)

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DETAIL D

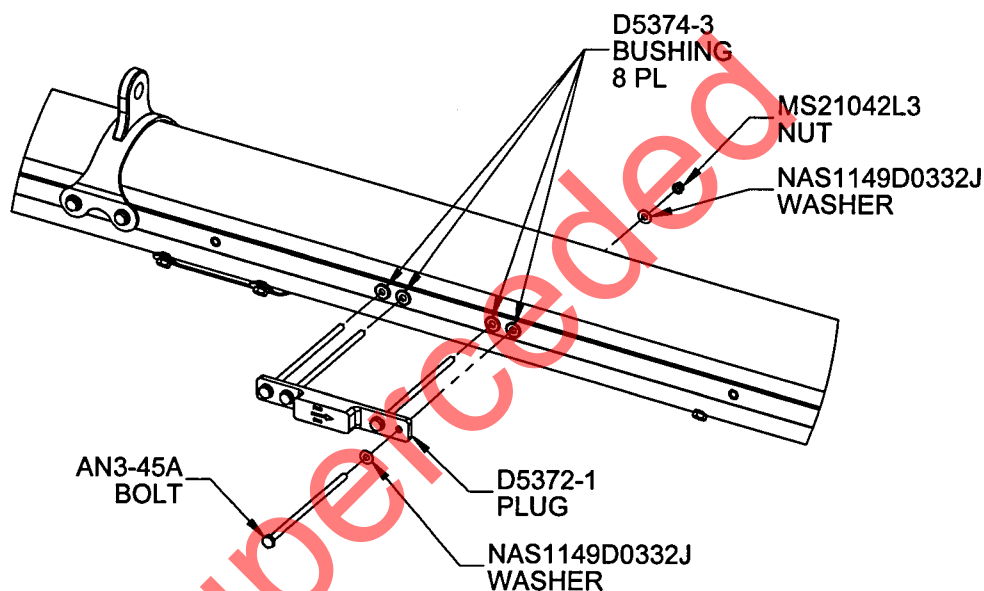
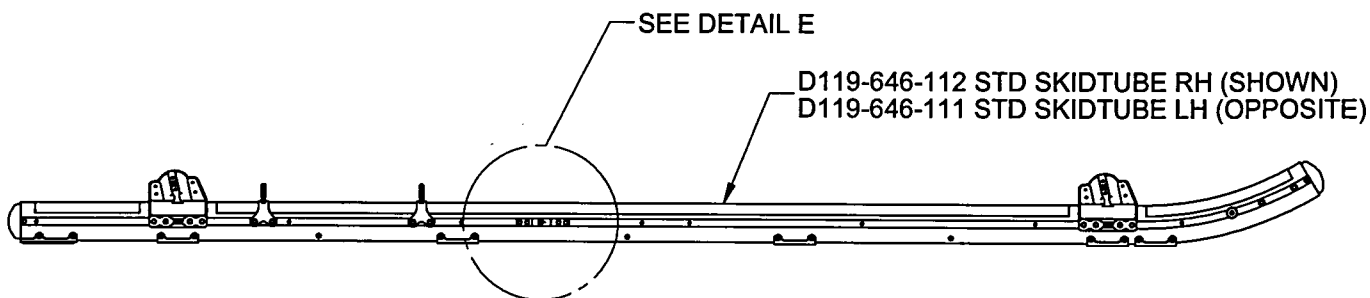
FIGURE 3: USING D5376-1 DRILLING JIG



D5376-1 DRILLING JIG IS ONLY USED WITH SKIDTUBE ASSEMBLIES:
- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR
- D119-646-211/-212 CHG 005 AND PRIOR

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DETAIL E

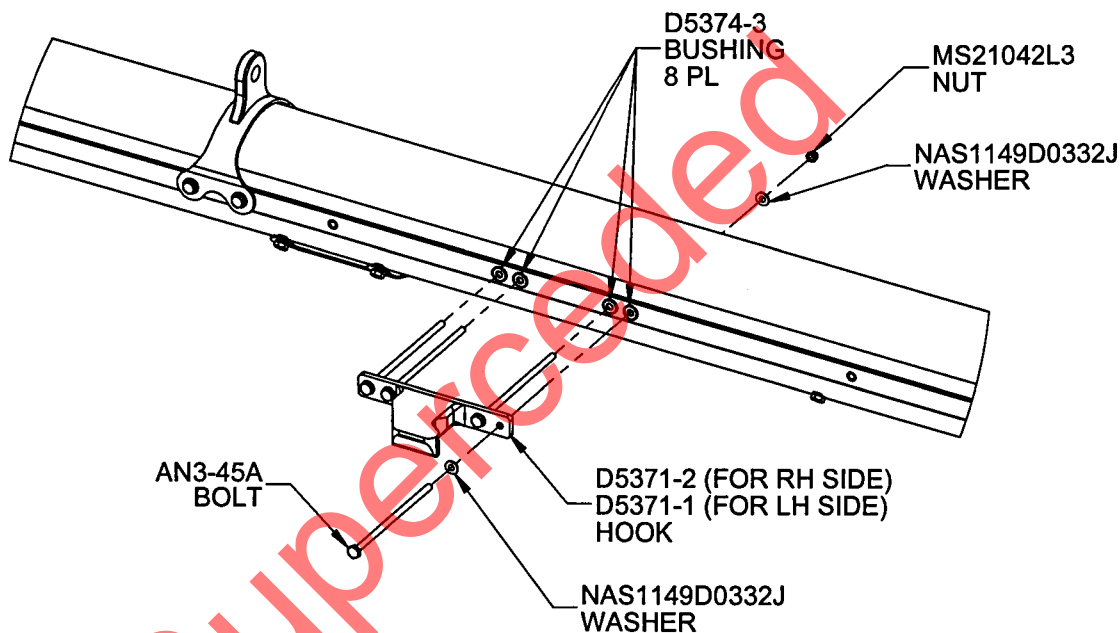
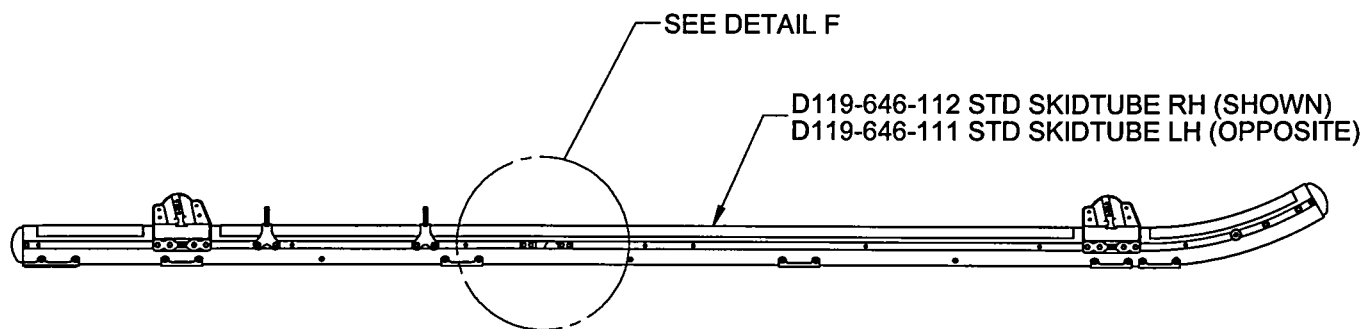
FIGURE 4: D5372-1 PLUG INSTALLATION



D5374-3 BUSHINGS ARE ONLY USED WITH SKIDTUBE ASSEMBLIES:
- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR
- D119-646-211/-212 CHG 005 AND PRIOR

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DETAIL F

FIGURE 5: D5371-1/-2 HOOK INSTALLATION



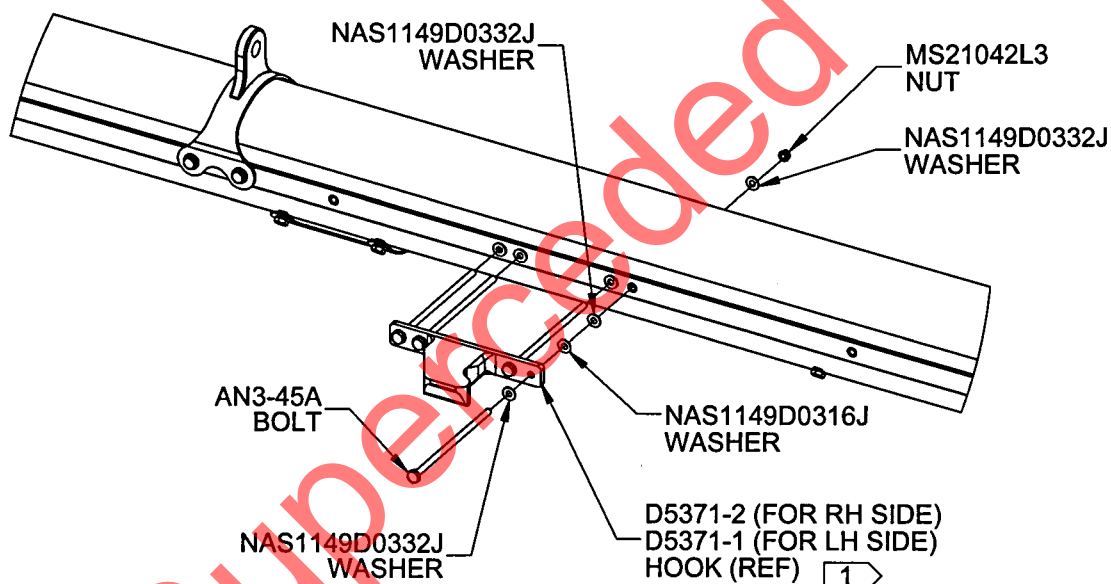
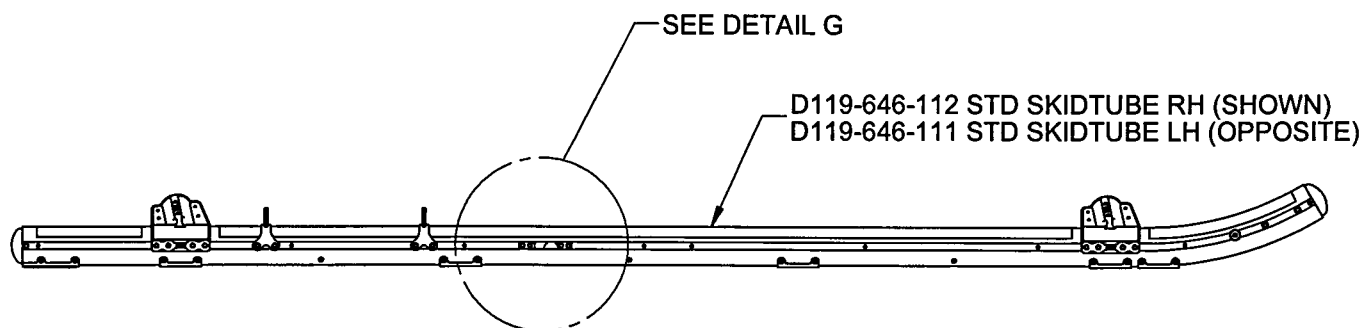
D5374-3 BUSHINGS ARE ONLY USED WITH SKIDTUBE ASSEMBLIES:
 - D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR
 - D119-646-211/-212 CHG 005 AND PRIOR

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NOTES:

1) D5371-1/2 HOOK ASSEMBLY SHOWN, D5372-1 PLUG ASSEMBLY SIMILAR.



DETAIL G



FIGURE 6: HOOK & PLUG INSTALLATION

NAS1149D0316J and NAS1149D0332J WASHER BUILDUP IS ONLY USED WITH SKIDTUBE ASSEMBLIES:

- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 005 AND SUBSEQUENT
- D119-646-211/-212 CHG 006 AND SUBSEQUENT

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